

Decision Document

Solid Waste Management Unit I06

30-5 Spill Site

Hawthorne Army Depot

Hawthorne, Nevada



Hawthorne Army
Depot



July 1999

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ENVIRONMENTAL PROTECTION

Decision Document

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Depot

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Decision Document SWMU I-06

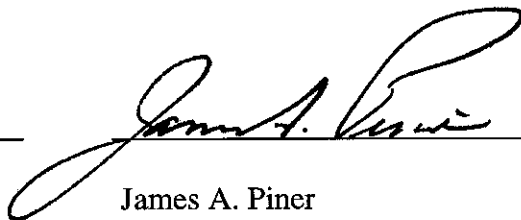
July 1999

The selected remedy is protective of human health and the environment. It has been shown that a complete pathway to human health and the environment does not exist, and there is no potential for an exposure pathway to be completed in the future.

U. S. Army

13 Sept. 99

Date

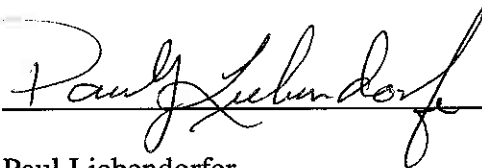


James A. Piner
Lieutenant Colonel, U.S. Army

State of Nevada

15 Sept 99

Date



Paul Liebendorfer
Chief, Bureau of Federal Facilities

**Decision Document
SWMU I-06, 30-5 Spill Site
Hawthorne Army Depot
Hawthorne, Nevada**

1.0 Introduction:

This decision document describes the rationale for the proposed closure of SWMU I-06, the 30-5 spill site, at the Hawthorne Army Depot (HWAD), Hawthorne, Nevada. This document was prepared by the U.S. Army Corps of Engineers, Sacramento District, HWAD and the Nevada Department of Environmental Protection (NDEP).

Tetra Tech, Inc. (Tt), was tasked by the US Army Corps of Engineers, Sacramento District (USACE), to perform remedial investigations and ground water monitoring at the Hawthorne Army Depot (HWAD), Hawthorne, Nevada. These tasks were conducted from 1993 through 1997, primarily at solid waste management units (SWMUs) designated by the Army and the Nevada Division of Environmental Protection (NDEP). The NDEP is the lead regulatory agency for environmental issues at HWAD. The purpose of the monitoring was to determine the extent and degree of environmental impacts, if any, associated with activities performed at each SWMU. The primary goal of the investigation was to assess the environmental impacts and to report the findings, present conclusions, and recommend any remediation, if necessary.

With guidance from the NDEP, basewide proposed closure goals (PCGs) for soil were established as acceptable levels so that SWMU closure could be recommended and to assist in directing the investigative efforts toward those SWMUs where the target analytes were of greatest concern. These PCGs were used as action levels throughout this investigation and are used for comparison with the detected analytes in this report.

2.0 Site History

SWMU I06 is in the western portion of the HWAD's south magazine area, approximately 150 feet southeast of the intersection of Fifth Avenue South and West Road and across Fifth Avenue South from magazine 30AT5 (Figure 1-1). This SWMU contains four spill areas of "FS smoke" from smoke-screening devices and diesel from a portable generator. While the exact locations of these spill areas were not documented, the areas were known to be in the general vicinity of SWMU I06 adjacent to Fifth Avenue South. The USACE, HWAD, and the NDEP agreed to define the boundaries of each SWMU using annotated monuments and survey pins. As part of Tt's 1997 field investigation, a survey monument was constructed and surveyed at SWMU I06. A brass survey pin on the monument designates the monument number HWAAP-36-1996 and the SWMU number I06. Two corner pins were set and surveyed to define the SWMU boundary, with

the monument as the west corner. The location of these corner markers and the SWMU boundary are shown in Appendix A.

3.0 Site Conditions

The ground surface was observed to be primarily silty sand and poorly graded sand with silt that was sparsely vegetated with desert scrub grass and tumbleweeds (fig 1-2). Using the calculated ground water elevations from the basewide network of monitoring wells; the depth to the shallowest ground water at this SWMU is interpolated to be approximately 400 feet below the ground surface (bgs), with a projected ground water gradient direction estimated to be toward the northwest.

SWMU I06 is the site of four spill areas along the north shoulder of Fifth Avenue South. These spills were releases of FS smoke from smoke-screening devices and diesel from a portable generator that reportedly occurred in August of 1988 when devices containing FS smoke were being processed by a contractor (Millsap 1994). FS smoke is a liquid known to contain chlorosulfonic acid and sulfur trioxide. Investigations of the site would focus on inorganic anions, TPHd and pH as the chemicals of concern.

Basewide PCGs for soil at HWAD were established during the remedial investigations with guidance from the NDEP (appendix B). The purposes of these PCGs are to establish acceptable levels so that SWMU closure could be recommended and to assist in directing the investigative efforts toward those SWMUs where the environmental impacts are the greatest. The PCGs were established for target analytes of potential environmental concern that were detected in soils during the current and previous investigations at HWAD basewide.

4.0 INVESTIGATIONS

HWAD personnel collected three surface soil samples from each of the four spill areas in August of 1988 when the spills occurred. The sample locations and areas were marked with wooden stakes but were not documented on a map; therefore, subsequent inspections of SWMU I06 could not establish the exact locations of the spill areas or the soil sample locations. These analytical results were reported to HWAD in a memorandum from the USAEHA dated 3 November 1988 (USAEHA 1988) and were subsequently reported to the NDEP in a letter from the HWAD (Justus 1988). During Tt's November 1993 site inspection of SWMU I06, the exact locations of the spill areas at SWMU I06 could not be determined from the unlabeled wooden stakes found at this SWMU. A white powder was observed on the ground surface at several locations within the SWMU boundary, and was suspected to be precipitated chemicals from the FS smoke releases. No diesel-stained soils were observed at SWMU I06. Based on the chemicals that were reportedly released at SWMU I06, the target analytes are known to be chlorosulfonic acid, sulfur trioxide, and diesel.

Field activities were performed according to the 1994 and 1997 health and safety plan (Tt 1994a and 1997c) and Tt's 1994 workplan and 1997 data package (Tt 1994b and 1997d).

All of Tt's sampling and analyses were performed according to Tt's 1994 chemical data acquisition plan and 1997 sampling and analysis plan (Tt 1994c and 1997e). Twenty-three surface soil samples, including three duplicate samples, were collected from the surface to depths of 0.5 feet bgs, and six near-surface soil samples were collected by a hand auger at four sample locations from depths of 1.5 to 5 feet bgs (fig. 1-3). All of the surface soil samples collected in 1994 were analyzed for chloride anions as an indicator of chlorosulfonic acid and for total petroleum as diesel (TPH-d) by the Brown and Caldwell Analytical Laboratories (BCA), using standard US Environmental Protection Agency (USEPA) methods and reporting limits (RLs). All of the surface and subsurface soil samples collected in 1997 were analyzed for chloride, for sulfate and sulfide anions as an indicator of chlorosulfonic acid and sulfur trioxide, and for pH by the Applied Physics and Chemistry Laboratories (APCL), using standard USEPA methods and RLs.

5.0 Investigation Results

During Tt's 1994 and 1997 remedial investigations of SWMU I06, no acidic pH values were found that would indicate that the FS smoke that was reportedly released at this SWMU persists in its original state in the surface or near-surface soils. Appendix C shows the analysis results from these investigations. Also, no staining or high concentrations (greater than the PCG) of TPH-d were found that would indicate the presence of petroleum hydrocarbons from the reported diesel release. It appears that the target analytes for SWMU I06 are not present in the surface soils at concentrations that will require remediation, and do not likely pose a health risk to on-site receptors. Therefore, no further action was the remedial action for this site.

6.0 Remediation

No remediation action was required for this site.

7.0 Remediation Results

Not applicable

8.0 Public Involvement:

It is the U.S. Department of Defense and Army policy to involve the local community throughout the investigation process at an installation. To initiate this involvement, HWAD has established and maintains a repository library at the local public library. This repository includes final copies of all past studies and other documents regarding environmental issues at HWAD. As future environmental documents are made available to HWAD the repository shall be updated.

HWAD has solicited community participation in establishment of a restoration and advisory board (RAB). To date there has been insufficient response and HWAD has not formed a RAB. HWAD has held open houses to inform the public of on going environmental issues. HWAD continues to solicit community involvement, and will establish a RAB should sufficient community interest be obtained.

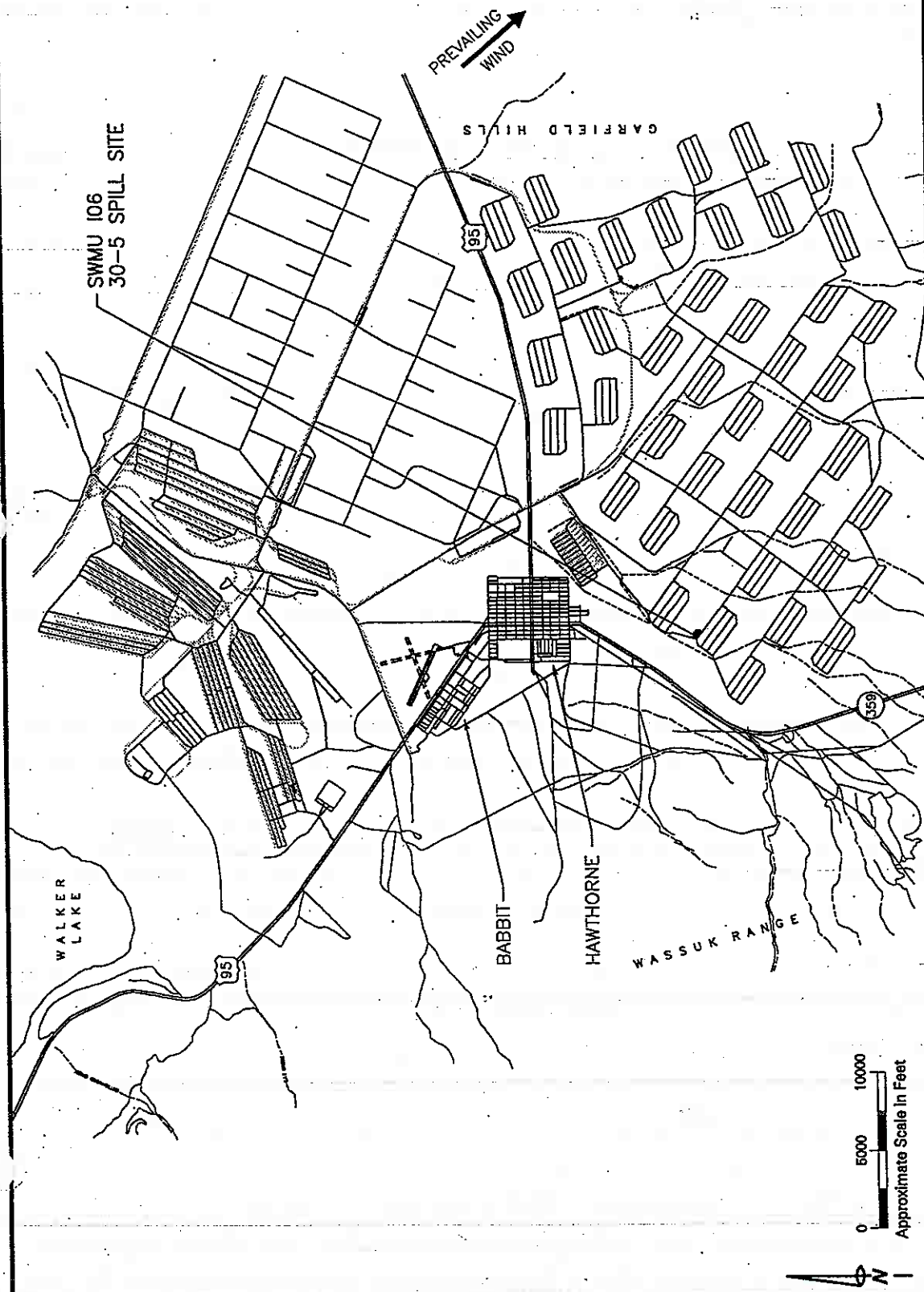
9.0 Conclusions and Recommendations

There is no evidence of FS smoke in its acidic state at SWMU I06, and only minor concentrations of TPH-d were found at this SWMU. SWMU I06 is recommended to the NDEP for site closure without land use restrictions.

10.0 References

- NDEP. September 1998. Letter to HWAD. Draft Remedial Investigation reports, Solid Waste Management Units A05, I05, I06, I17, I18.
- Justus, F. 1988. Letter to Mr. John West, Nevada Division of Environmental Protection, conveying the results of laboratory analyses of 12 soil samples from the FS Smoke Operations site (SWMU I06). Hawthorne Army Ammunition Plant, Hawthorne, Nevada. November 17, 1988.
- Millsap, Herman. March 10, 1994. Hawthorne Army Depot. Personal communication with Mr. Keith Kennedy of Tetra Tech.
- Tetra Tech, Inc. (Tt). 1993. Draft Technical Memorandum for Group B SWMUs, Hawthorne Army Ammunition Plant. November 1993.
- _____. 1994a. Hawthorne Army Ammunition Plant - Group B Remedial Investigation: Final Site Safety and Health Plan.
- _____. 1994b. Hawthorne Army Ammunition Plant - Group B Remedial Investigation: Final Work Plan. Two volumes.
- _____. 1994c. Hawthorne Army Ammunition Plant - Group B Remedial Investigation: Final Chemical Data Acquisition Plan.
- _____. 1997a. Final Quarterly Ground Water Monitoring Report, First Quarter 1997, Hawthorne Army Depot, Hawthorne, Nevada. September 1997.
- _____. 1997b. Quarterly Ground Water Monitoring Report, Second Quarter 1997, Hawthorne Army Depot, Hawthorne, Nevada. July 1997.
- _____. 1997c. Final Site Health and Safety Plan, Hawthorne Army Depot, Hawthorne, Nevada. February 1997.
- _____. 1997d. Final Data Package with recommendations for future action, Group B solid waste management units, Hawthorne Army Depot, Hawthorne, Nevada, Volumes 1, 2a, and 2b. January 1997.
- _____. 1997e. Final Sampling and Analysis Plan, Remedial Investigations, Groups A and B Solid Waste Management Units, Hawthorne Army Depot, Hawthorne, Nevada. February 1997.

USAEHA. 1988. Memorandum for Commander, Hawthorne Army Ammunition Plant.
Subject: Hazardous Waste Management Consultation No. 37-26-0236-88,
Results of Analyses of Soil Samples from the FS Smoke Operations Site (SWMU
I06) at Hawthorne Army Ammunition Plant, Hawthorne, Nevada. November 3,
1988.



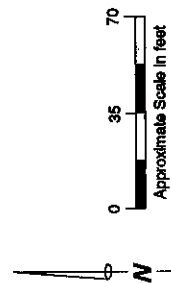
SOURCE: TETRA TECH FINAL DATA PACKAGE, 1996 (REV. 1997)

Site Location Map
SWMU 106
30-5 Spill Site
 Hawthorne Army Depot
 Hawthorne, Nevada
Figure 1-1

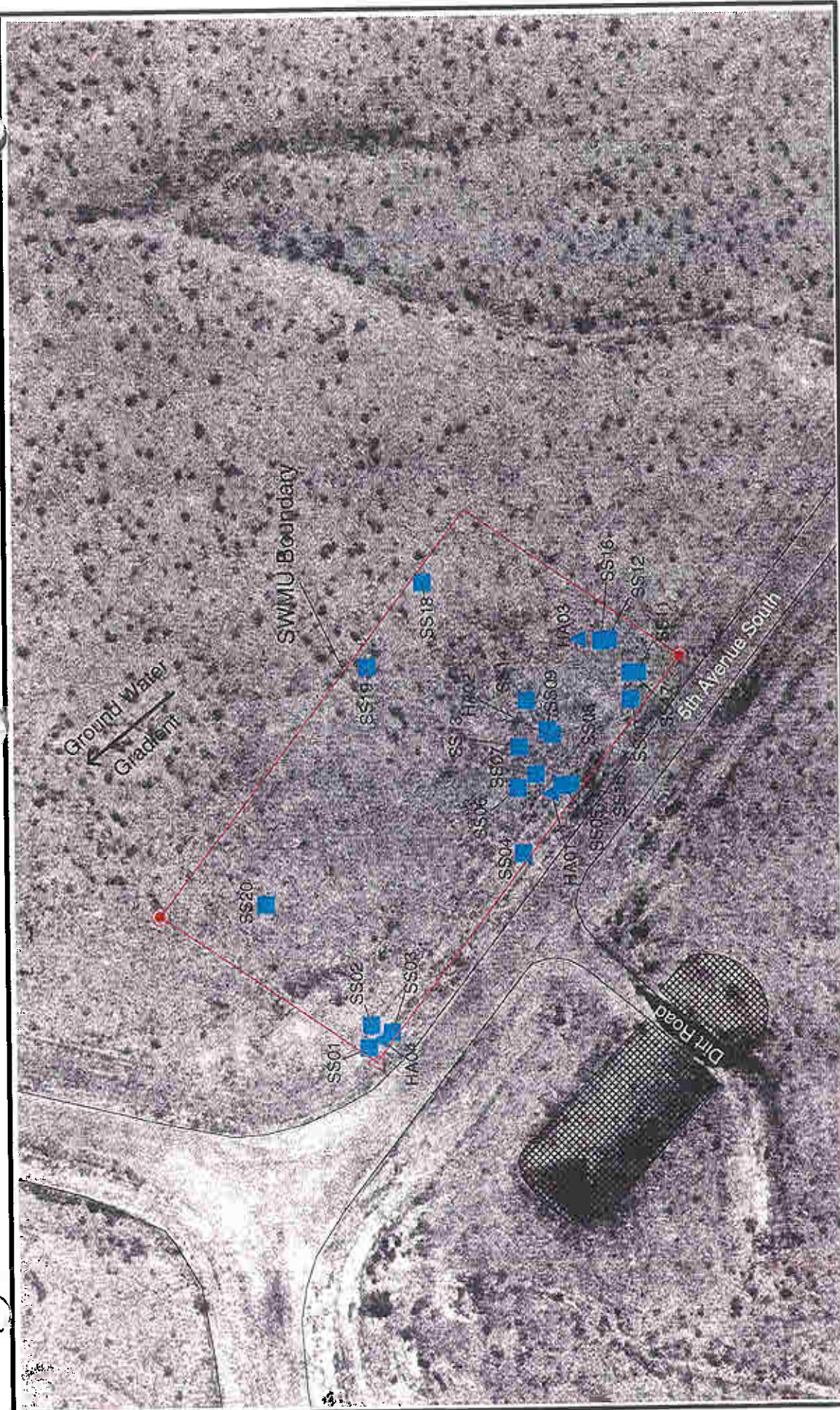


Legend:

- Boundary Corner Pin
- Explosion Barrier
- SWMU Monument



Site Map
SWMU 106
30-5 Spill Site
Hawthorne Army Depot
Hawthorne, Nevada
Figure 1-2



Investigation Activity Map
SWMU 106
30-5 Spill Site
 Hawthorne Army Depot
 Hawthorne, Nevada
Figure 3-1

Legend:

- Surface Soil/Sediment Sample
- Boundary Corner Pin
- Hand Auger Location
- Explosion Barrier
- ▲ SWMU Monument

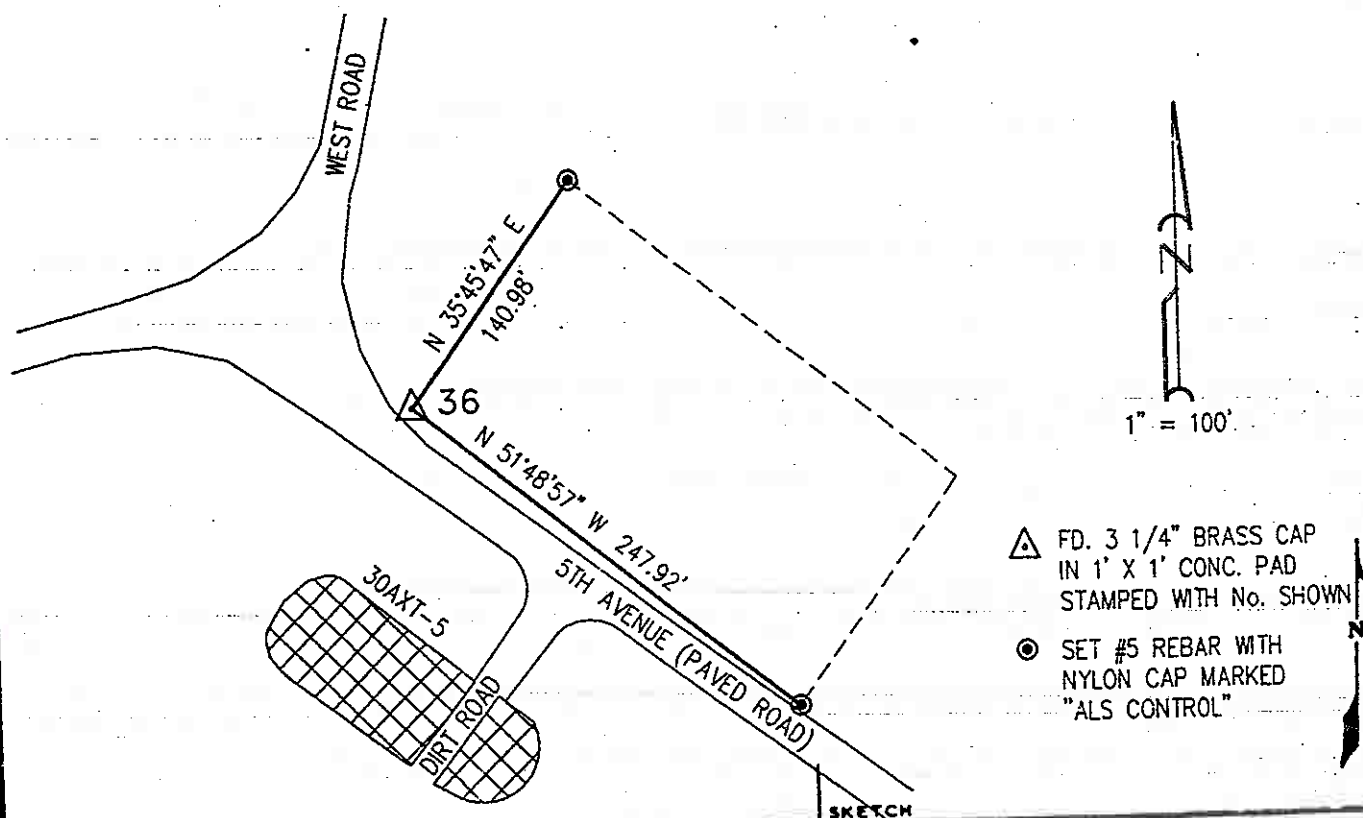
Appendix A

COUNTRY USA	TYPE OF MARK BRASS CAP	STATION 36	ELEVATION 4588.46 (FT) (M)	
LOCALITY HAWTHORNE NEV.	STAMPING ON MARK 36 I-6	AGENCY (CAST IN MARKS) COE HWAAP	ESTABLISHED BY (AGENCY) A.L.S.	
LATITUDE 38°29'44.03328" N	LONGITUDE 118°31'39.30804" W	DATUM NAD '27	DATE 1997	
(NORTHING)(EASTING) (FT) (M) 1363505.45	(EASTING)(NORTHING) (FT) (M) 487335.35	GRID AND ZONE NEVADA SP WEST	ORDER ZHD	

TO OBTAIN GRID AZIMUTH, ADD TO THE GEODETIC AZIMUTH
TO OBTAIN GRID AZ. (ADD)(SUB.) TO THE GEODETIC AZIMUTH

OBJECT	AZIMUTH OR DIRECTION (GEODETIC)(GRID) (MAGNETIC)	BACK AZIMUTH	GEOD. DISTANCE		GRID DISTANCE	
			(METERS)	(FEET)	(METERS)	(FEET)

MONUMENT 36 - SWMU I-6
FROM HIGHWAY 95 TAKE MINE ROAD SOUTHEAST 2000 FEET TO WEST ROAD,
THEN SOUTHWEST ON WEST ROAD 2.6 MILES TO 5TH AVENUE SOUTH. MONUMENT IS
EAST OF WEST ROAD AND NORTHEAST OF 5TH AVENUE NEAR THEIR
INTERSECTION. SEE MAP BELOW. MONUMENT IS A 3 1/4" BRASS CAP SET
IN A 1' X 1' CONCRETE PAD AND IS MARKED WITH A 4" X 4" X 6' WOOD
POST, PAINTED WHITE.



DA FORM 1959
1 OCT 44

REPLACES DA FORMS 1959
AND 1960, 1 FEB 57, WHICH
ARE OBSOLETE.

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent
agency is TRADOC.

SWMU I06 Survey Data
Hawthorne Army Depot
Hawthorne, Nevada

SWMU	Point ID	Northing (feet)	Easting (feet)	Elevation
I06	HWAAP-36-1996	1363505.48	487335.31	4588.46
I06	Pin 1	1363619.87	487417.71	NE
I06	Pin 2	1363352.22	487530.18	NE
I06	HA01	1363417.04	487465.33	NE
I06	HA02	1363418.88	487494.50	NE
I06	HA03	1363404.71	487542.69	NE
I06	HA04	1363503.04	487346.60	NE
I06	SS01	1363509.58	487343.17	NE
I06	SS03	1363497.58	487350.02	NE
I06	SS04	1363430.90	487435.86	NE
I06	SS05	1363411.58	487468.77	NE
I06	SS06	1363434.51	487469.33	NE
I06	SS07	1363425.39	487475.64	NE
I06	SS08	1363417.39	487495.37	NE
I06	SS09	1363419.94	487497.67	NE
I06	SS10	1363376.96	487509.95	NE
I06	SS11	1363373.68	487523.40	NE
I06	SS12	1363389.33	487541.43	NE
I06	SS13	1363434.34	487490.15	NE
I06	SS14	1363431.12	487513.48	NE
I06	SS15	1363406.94	487468.96	NE
I06	SS16	1384361.93	490779.64	NE
I06	SS17	1363377.46	487523.55	NE
I06	SS18	1363487.07	487577.45	NE
I06	SS19	1363514.80	487536.42	NE
I06	SS20	1363564.97	487419.75	NE

Notes:

NE = Not established.

Coordinate data based on electronic map file using the NAD 1927 datum.

Elevation data based on surveyors map using NGVD 1929 datum.

Appendix B

**Proposed Closure Goals
Hawthorne Army Depot
Hawthorne, Nevada**

Constituent of Concern	Chemical Classification	Carcinogenic (C) or Non-carcinogenic (NC)	HWAD Proposed Closure Goals for Soil (mg/kg)	HWAD Proposed Closure Goal Source
Nitrate	Anion	NC	128,000	Calculated Subpart S ^a
2-Amino-dinitrotoluene	Explosive	NC	-	NA ^e
4-Amino-dinitrotoluene	Explosive	NC	-	NA
1,3-Dinitrobenzene	Explosive	NC	8	Calculated Subpart S
2,4-Dinitrotoluene	Explosive	NC	160	Calculated Subpart S
2,6-Dinitrotoluene	Explosive	NC	80	Calculated Subpart S
HMX	Explosive	NC	4,000	Calculated Subpart S
Nitrobenzene	Explosive	NC	40	Calculated Subpart S
Nitrotoluene (2-, 3-, 4-)	Explosive	NC	800	Calculated Subpart S
RDX	Explosive	NC	64	Calculated Subpart S
Tetryl	Explosive	NC	800	Calculated Subpart S
1,3,5-Trinitrobenzene	Explosive	NC	4	Calculated Subpart S
2,4,6-Trinitrotoluene	Explosive	C	233	Calculated Subpart S
Aluminum	Metal	NC	80,000	Calculated Subpart S
Arsenic (cancer endpoint)	Metal	C & NC	30	Background ^e
Barium and compounds	Metal	NC	5,600	Calculated Subpart S
Beryllium and compounds	Metal	C	1	Background
Cadmium and compounds	Metal	NC	40	Calculated Subpart S
Chromium III and compounds	Metal	NC	80,000	Calculated Subpart S
Lead	Metal	NC	1000	PRG ^d
Mercury and compounds (inorganic)	Metal	NC	24	Calculated Subpart S
Selenium	Metal	NC	400	Calculated Subpart S
Silver and compounds	Metal	NC	400	Calculated Subpart S
Acenaphthene	PAH	NC	4,800	Calculated Subpart S
Benzo[a]anthracene	PAH	C	0.96	Calculated Subpart S
Benzo[a]pyrene	PAH	C	0.10	Detection Limit ^e
Benzo[b]fluoranthene	PAH	C	0.96	Calculated Subpart S
Benzo[k]fluoranthene	PAH	C	10	Calculated Subpart S
Chrysene	PAH	C	96	Calculated Subpart S
Dibenz[ah]anthracene	PAH	C	0.96	Calculated Subpart S
Fluoranthene	PAH	NC	3,200	Calculated Subpart S
Fluorene	PAH	NC	3,200	Calculated Subpart S
Indeno[1,2,3-cd]pyrene	PAH	C	-	NA
Naphthalene	PAH	NC	3,200	Calculated Subpart S
Pyrene	PAH	NC	2,400	Calculated Subpart S
Total Petroleum Hydrocarbons as Diesel (TPH-d)	PAH	C	100	NDEP Level Clean-up ^f
Polychlorinated biphenyls (PCBs)	PCBs	C	25	TSCA ^g
Bis(2-ethylhexyl)phthalate (DEHP)	SVOC	C	1,600	Calculated Subpart S
Bromoform (tribromomethane)	SVOC	C	89	Calculated Subpart S

**Proposed Closure Goals
Hawthorne Army Depot
Hawthorne, Nevada**

Constituent of Concern	Chemical Classification	Carcinogenic (C) or Non-carcinogenic (NC)	HWAD Proposed Closure Goals for Soil (mg/kg)	HWAD Proposed Closure Goal Source
Butyl benzyl phthalate	SVOC	NC	16,000	Calculated Subpart S
Dibromochloromethane	SVOC	C	83	Calculated Subpart S
Dibutyl-phthalate	SVOC	NC	8,000	Calculated Subpart S
Diethyl phthalate	SVOC	NC	64,000	Calculated Subpart S
Phenanthrene	SVOC		-	NA
Phenol	SVOC	NC	48,000	Calculated Subpart S
Acetone	VOC	NC	800	Calculated Subpart S
Anthracene	VOC	NC	24,000	Calculated Subpart S
Benzene	VOC	C	24	Calculated Subpart S
Bis(2-chloroisopropyl)ether	VOC	C	3,200	Calculated Subpart S
Bromomethane	VOC	NC	112	Calculated Subpart S
Carbon tetrachloride	VOC	C	5	Calculated Subpart S
Chlorobenzene	VOC	NC	1,600	Calculated Subpart S
Chloroform	VOC	C	115	Calculated Subpart S
Chloromethane	VOC	C	538	Calculated Subpart S
Dibromomethane	VOC	C	0.008	Calculated Subpart S
1,2-Dichlorobenzene	VOC	NC	7,200	Calculated Subpart S
1,4-Dichlorobenzene	VOC	C	18,300	Calculated Subpart S
Dichlorodifluoromethane	VOC	C	16,000	Calculated Subpart S
Ethylbenzene	VOC	NC	8,000	Calculated Subpart S
Methylene bromide	VOC	NC	800	Calculated Subpart S
Methylene chloride	VOC	C	4,800	Calculated Subpart S
2-Methylnaphthalene	VOC		-	NA
1,1,2,2-Tetrachloroethane	VOC	C	35	Calculated Subpart S
Tetrachloroethylene (PCE)	VOC	C & NC	800	Calculated Subpart S
Toluene	VOC	NC	16,000	Calculated Subpart S
1,1,1-Trichloroethane	VOC	NC	7,200	Calculated Subpart S
Trichloroethylene (TCE)	VOC	C & NC	480	Calculated Subpart S
Trichlorofluoromethane	VOC	NC	24,000	Calculated Subpart S
1,2,3-Trichloropropane	VOC	C	480	Calculated Subpart S
Vinyl chloride	VOC	C	0.37	Calculated Subpart S
Xylene Total (m-, o-, p-)	VOC	NC	160,000	Calculated Subpart S
2,3,7,8-TCDD	Dioxin	C	0.000005	Calculated Subpart S

^a RCRA 55 FR 30870

^b Not available

^c Highest background concentration detected in 50 background soil samples

^d Smucker, Stanford J. USEPA Region IX, Preliminary Remedial Goals, Second Half, Sep. 1995

^e Method detection limit for Volatile Organic Compounds by EPA Method 8260 or

Semi-Volatile Organic Compounds analyzed by EPA Method 8270

^f Nevada Division of Environmental Protection

^g Cleanup level for PCB spills in accordance with Toxic Substance and Control Act Spill Policy Guidelines 40 CFR 761

Appendix C

Table 4-1
Summary of Detected Analytical Results for Soil Samples
SWMU I06 - 30-5 Spill Site

Sample ID	I06-SS01-1-S	I06-SS02-1-S	I06-SS03-1-S	I06-SS04-1-S	I06-SS05-1-S	I06-SS06-1-S	I06-SS07-1-S	I06-DP115	I06-DP116
Location ID	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS07	SS07
Sample Date	7/20/94	7/20/94	7/20/94	7/20/94	7/20/94	7/20/94	7/20/94	7/20/94	7/20/94
Sample Depth (feet)	0	0	0	0	0	0	0	0	0
Inorganic Anions (mg/kg)									
Method 300s									
Chloride	29	36	29	110	3000	820	1500	1800	NA
Sulfate	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (mg/kg)									
Method 8015M									
TPH (as diesel)	<0.2	<0.2	<5	7.9	2.1 J	<0.2	<0.2	NA	<0.2
pH									
Method 9045B									
pH	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sample ID	I06-SS08-1-S	I06-SS09-1-S	I06-SS10-1-S	I06-SS11-1-S	I06-SS12-1-S	I06-SS13-1-S	I06-SS14-1-S	I06-SS15-1-S	I06-SS16-1-S
Location ID	SS08	SS09	SS10	SS11	SS12	SS13	SS14	SS15	SS16
Sample Date	7/20/94	7/20/94	7/20/94	7/20/94	7/20/94	2/16/97	2/16/97	2/16/97	2/16/97
Sample Depth (feet)	0	0	0	0	0	0.5	0.5	0.5	0.5
Inorganic Anions (mg/kg)									
Method 300s									
Chloride	580	1600	630	1400	2600	<0.2	<0.2	1980	405
Sulfate	NA	NA	NA	NA	NA	<1	9	2140	7280
TPH (mg/kg)									
Method 8015M									
TPH (as diesel)	1 J	<0.2	<0.2	<0.2	3.5 J	NA	NA	NA	NA
pH									
Method 9045B									
pH	NA	NA	NA	NA	NA	8.63	7.99	6.06	10.6

Table 4-1
Summary of Detected Analytical Results for Soil Samples
SWMU I06 - 30-5 Spill Site (continued)

Sample ID	I06-SS17-1-S	I06-SS21-1-S	I06-SS18-1-S	I06-SS19-1-S	I06-SS20-1-S	I06-HA01-1-S	I06-HA01-2-S	I06-HA02-1-S	I06-HA02-2-S
Location ID	SS17	SS17	SS18	SS19	SS20	HA01	HA01	HA02	HA02
Sample Date	2/16/97	2/16/97	2/16/97	2/16/97	2/16/97	7/25/94	7/25/94	7/25/94	7/25/94
Sample Depth (feet)	0.5	0.5	0.5	0.5	0.5	2	3.5	2	5
Inorganic Anions (mg/kg)									
Method 300s									
Chloride	30	18	8	5	5	630	820	160	140
Sulfate	5800	11200	20	4	20	NA	NA	NA	NA
TPH (mg/kg)									
Method 8015M									
TPH (as diesel)	NA	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2
pH									
Method 9045B									
pH	9.79	9.92	7.95	8.53	6.82	NA	NA	NA	NA

Table 4-1
Summary of Detected Analytical Results for Soil Samples
SWMU I06 - 30-5 Spill Site (continued)

Sample ID	I06-HA03-1-S	I06-HA04-1-S	Analyses										Minimum	Maximum	PCG	PCG Hits	Background	Hits	
Location ID	HA03	HA04																	
Sample Date	7/25/94	7/25/94																	
Sample Depth (feet)	1.5	2																	
Inorganic Anions (mg/kg)																			
Method 300s	120	34	28	26	5	3000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		
Chloride	NA	NA	9	8	4	11200	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		
Sulfate																			
TPH (mg/kg)																			
Method 8015M																			
TPH (as diesel)	<0.2	<0.2	19	4	1	7.9	100	0	NE	NE	NE	NE	NE	NE	NE	NE	NE		
pH																			
Method 9045B																			
pH	NA	NA	9	9	6.06	10.6	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		

Notes:

Analytical qualifiers are defined in Appendix D.

NA = Not analyzed.

NE = Not established.

mg/kg = Milligrams per kilogram.

Soil samples I06-DP115 and I06-DP116 are split duplicate samples of I06-SS07-1-S.

Soil sample I06-SS21-1-S is a split duplicate sample of I06-SS17-1-S.

Appendix D



I-6, View to north, from east of 30AT5, north of 5th Avenue South.
#R4-P22, 11/4/93



I-6, Detail of white precipitate on ground surface east of 30AT5.
#R4-P23, 11/4/93



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